

## CASE FOR EYEGLASSES

### Background of the Invention

#### 5 *Field of the Invention*

The invention relates to a case for eyeglasses. In particular, the case is compact and convenient to operate, while providing for excellent storage of the eyeglasses by preventing contact between the lenses and the surface of the case.

#### *Description of the Prior Art*

Generally, storage cases for eyeglasses may be of several types. A soft case in the form of a pliable sleeve is simple and easy to use. However, because it is soft, it is not completely protective of the glasses held within, which may be damaged from outside force. Since glasses are often kept in pockets or purses, this is a serious drawback. In addition, the pliability of this type of case means that it is difficult to ensure that the glasses do not inadvertently escape from the sleeve. If the sleeve has an end which is always open, then this is convenient for inserting and removing the glasses, but allows the glasses to slide out unintentionally. If there is an end which closes, for example by way of a fold-over lid, then this requires a second step after inserting the  
20 glasses. Finally, the pliable nature of the case means that, while the case may hold the glasses snugly within, the lenses will necessarily be in contact with the inside of the case. Even if a liner of protective material is inserted in the case, or around the glasses, this still means that there is something in contact with the lenses.

A rigid case is also well known. While this type of case may protect the glasses from damage caused by outside force, the glasses usually are permitted to rattle about within the case. Even with a protective liner, the lenses are still being contacted and subjected to potential damage. Even a protective liner or cloth can cause damage to the lens. Furthermore, this type of case usually requires a closure which needs the operation of two hands.

Accordingly, it is an object of the present invention to provide a case for eyeglasses which holds the eyeglasses firmly within the case while ensuring that the lenses are free of contact with the case at all times, and which also protects the eyeglasses from outside forces.

It is a further object of the invention to provide a case which can be easily opened and closed with a simple, one-motion, one-handed operation.

It is a still further object of the invention to provide a case which is of one-piece construction, and is therefore convenient to manufacture.

### Summary of the Invention

Accordingly, the invention provides for a case for retaining eyeglasses, the case having a front side and a rear side joined along a bottom perimeter thereof to form a closed bottom of the case. A top perimeter of the front side and a top perimeter of the back side are separate from each other, and rest against each other when the case is in a resting, closed position. At least one of the sides has a generally convex outer surface and a corresponding concave inner surface to form a hollow portion within the case. The top perimeters and the bottom perimeters meet to form two junctions at

opposite side edges of the case, such that when inward pressure is applied at each junction, the top perimeters move away from each other to open the case, and upon release of said pressure, the top perimeters return to the closed position. To achieve this, it is preferable that the top perimeters be of arcuate shape, and the case be made of a material which is rigid, yet is flexible and has shape 'memory', such as PET (polyethylene terephthalate).

In a preferred embodiment, the case is for use in conjunction with eyeglasses of the type having locking hinges at the temple arm connections. The rear side of the case has a retaining cut-out notch formed out of the top perimeter thereof. When the glasses are folded, they are placed in the case, while leaving at least one temple arm outside of the case, with the hinge resting in the notch. The inside volume of the case is formed so that when the eyeglasses are placed within the case, the lenses do not touch the inside walls of the case. This is achieved by forming the case so that the temple arm residing outside of the case resides against the outside surface of the rear side, and prevents the glasses in the case from swinging toward the front side. In a preferred embodiment, a channel or the like is present on the rear face for further retaining the temple arm, and hence the glasses in position, against side to side movement.

In a further preferred embodiment, the case is for use in conjunction with eyeglasses of the type that have locking hinges at the temple arm connection and are hinged at the bridge so that the lens frames may be folded toward each other. When the glasses are folded at the bridge and the temple hinge, they are placed in the case with both arms are residing against the outside of the case and a nose pad of the eyeglasses, and not the lenses, contacting an inner wall. In a preferred embodiment,

the rear side includes opposing cut-outs formed out of the top perimeter thereof which are of a size and positioned on the top perimeter to provide that, during insertion of eyeglasses into the case, nose pads of eyeglasses pass therethrough to ease insertion of the eyeglasses into the case, thereby requiring that a minimum of pressure is applied at the junctions.

#### Brief Description of the Drawings

Fig. 1 is a rear plan view of a preferred embodiment of the case in accordance with the present invention.

Fig. 2 is a side view of the case of Fig. 1, in partial cross-section.

Fig. 3 is a perspective view showing eyeglasses inserted into the opened case of Fig. 1.

Fig. 4 is a side plan view showing eyeglasses residing within the closed case of Fig. 1.

Fig. 5 is a rear plan view of another preferred embodiment of a case in accordance with the present invention.

Fig. 6 is a side view of the case of Fig. 5.

Fig. 7 is a top view of the case of Fig. 5, in partial cross-section.

Fig. 8 is a rear plan view of another preferred embodiment of a case in accordance with the present invention.

Fig. 9 is a side view of the case of Fig. 8.

Fig. 10 is a top view of the case of Fig. 8, in partial cross-section.

Fig. 11 is a rear plan view of another preferred embodiment of a case in

accordance with the present invention showing eyeglasses inserted therein.

Fig. 12 is a side view of the case of Fig. 11 showing eyeglasses residing within the closed case.

## 5 Detailed Description of Preferred Embodiments

Fig. 1 shows a preferred embodiment of the present invention of a case 1 for eyeglasses having the general form of a clam shell. Referring to Fig. 1, and Fig. 2 which is a side view of the case 1, a front 2 and rear 4 side of the case 1 are corresponding about the perimeters. The front and rear sides 2, 4 are joined (either formed as a unitary piece or sealed together from two pieces) along the bottom perimeters to form a closed bottom 6 of the case 1, while top portions 8 of the sides 2, 4 remain free to form an openable top of the case 1. In the normal position, top edges 3 and 5 of the sides 2 and 4, respectively, rest against each other to keep the case 1 closed, but may be separated to open the case 1 in a manner described below.

At least one of the sides 2, 4 has a generally convex outer surface 10 and corresponding concave inner surface 11, so that a hollow storage portion 9 is formed in the case 1. In a preferred embodiment, both of the sides 2, 4 of the case 1 have convex outer surfaces. In addition to forming the volume inside, the outer convex surface also aids in the opening operation of the case as described below.

The case 1 is preferably formed of a material which is generally rigid, but may also be flexed when pressure is applied. When the pressure is released the material returns to its original form, and thus is considered to have a 'memory'. Materials of this type are well-known, with a preferred type being a plastic such as polyethylene

teraphthalate (PET). PET is preferred because it may be easily molded and pressed into the desired shape, is lightweight yet strong, and may be rendered transparent or translucent to provide an attractive display.

For the sake of description, with reference to Figs. 3 and 4 which, respectively, are perspective and side plan views of the case 1 with eyeglasses 13 having hinges 15 at the temple which provide a basic fold, and hinges at the bridge (not shown) which provide that lenses 17 may be folded toward each other. This compact, dual folding style may be matched with a case shaped accordingly, such as a generally circular perimeter or the clam shape of the case 1. With the dual folding style, both arms 19 of the eyeglasses 13 rest in a generally side-by-side position, facing in the same direction as shown in Fig. 3.

Referring to Figs. 3-4, the top open portion of the case 1 may be considered as a mouth 12. The edges 3, 5 of the mouth 12 include portions 3A, 5A which meet closed bottom portion 6 at the two corners 16 of the mouth 12 (also referred to as "junction"), one at either end of the mouth 12. In the resting position, the mouth 12 of the case 1 is closed. When pressure is applied simultaneously at each corner 16, inwardly toward the opposite corner in the direction of the arrows 14 as shown on Figs. 1 and 3, the mouth 12 opens sufficiently to allow insertion of eyeglasses 13, namely, the lens 17, into the inside of the case 1.

The inward pressure applied causes the top edge portions 3A and 5A to move away from each other in an arcuate motion, pivoting about the corners 16 of the mouth 12. When the pressure is released, the mouth 12 closes and returns to its original position, as shown in Figs. 1-2 and 4.

It is preferable that the corners of the mouth are not formed as a direct transition between the separate portions of the top, and unitary portions of the bottom. In this case, the pressure caused by opening of the mouth may transfer directly to the bottom adjacent bottom portion, thus causing the corners to tear. Therefore, a means for distributing the pressure should be located at each corner. This means may take the form of a small circular cut-out 7 at each corner 16, which acts to dissipate the pressure, and prevent tearing.

In order to securely retain the eyeglasses in the case 1, a cut-out notch 18 is located in the edge of one of the sides, preferably the rear side 4, in the top portion thereof forming the mouth 12. The precise size and shape of the notch 18 is determined according to the style and shape of eyeglasses that are to reside in the case 1.

While the case 1 may be used with any type of folding eyeglasses, it is especially adaptable to those eyeglasses 13 having hinges 15 which lock in place when folded. The arms 19 of the eyeglasses 13 are folded until the hinges 15 lock. The mouth 12 of the case 1 is opened by squeezing the corners 16, and the glasses 13 are inserted into the mouth 12, with at least one of the two hinges 15 resting within the notch 18, against the abutment 21 thereof. The case 1 can be opened with one hand, with the thumb applying pressure on one corner 16, and a finger or fingers applying pressure on the other corner 16. While the frames 17 of the eyeglasses 13 reside wholly within the case 1, at least one arm 19 resides outside of the case 1.

Referring to Figs. 2 and 4, inside the case 1, the hollow space portion 9 is formed to insure that the glasses 13 are held firmly in place, while the lenses 17 are not

permitted to touch the inside surface of the case. This is accomplished by shaping the two sides 2, 4, such that the at least one arm 19 residing outside of the case 1 is held against the outside surface of the rear side 4, while a portion of the eyeglasses 13 extending rearwardly from the lenses 17, such as a nose pad 23 or the other folded arm 19, is held firmly against the inside surface 11 of the rear side 4. This prevents any appreciable swinging motion of the lenses 17 from the rear side 4 toward the front side 2. The front side 2 is shaped with a sufficiently large concave inner face 11 so that the lenses 17 remain clear of, and in fact are prevented from touching, the inner surface 11.

Referring to Fig. 4, the rear face 4 of the case 1 should extend rearwardly in such a manner as to exert sufficient retaining force against the arm or arms 19 of the eyeglasses 17 residing outside of the case 1. This may be accomplished, in a preferred embodiment, by conforming the shape of the outside rear face of the case to the shape of the inner face of the arm. Thus, if the eyeglasses are such that the arms have an inner concave shape with a slight curve, the outside rear face of the case, at least in that region against which the arms will lie, can conform to the shape of the arms so that the eyeglasses rest retainingly against the outer face.

Figs. 5-7 show another preferred embodiment of a case 30 in accordance with the present invention which is similar in construction to the case 1 described above. Like reference numerals are used to refer to components in the case 30 that are similar, and preferably, identical in construction and operation to components included in the case 1. Referring to Figs. 5-7, the case 30 includes front and rear sides 2, 4, bottom and top portions 6, 8, edges 3, 5, outer and inner surfaces 10, 11, a hollow portion 9, a mouth 12, opposing corners 16, and a notch 18 with abutment portion 21. The outer



surface of the side 4 includes a retaining channel 24 having a bottom surface 26 that may be shaped to perform the retaining function. Likewise, it will be seen to the skilled artisan that so long as some portion of the outer face of the case 30 extends sufficiently to exert the needed outward retaining force against the arm of eyeglasses, it is not required that the face of the case conform along the entire length of the arm. Thus, a simple outward projection, properly sized and placed, can also achieve the desired effect.

In order to prevent a swinging motion of the eyeglasses in the direction between the two corners of the mouth 16, the preferred embodiment of the case 30 may have a means for retaining the eyeglasses to prevent such motion. Preferably, this retaining means may take the form of the channel 24 extending in the top to bottom direction of the case 30, or at least in the direction of the arms when the frame is residing within the case 30. The channel 24 includes sides 28 which can retain one or both arms of eyeglasses within the channel 24, thus limiting side-to-side motion. The channel 24 may be formed with its two sides 28 projecting outwardly from the surface of the rear side 4, or as an indentation within the outer surface 10. This particular form of retaining channel 24 is preferred for its ease of manufacture, and simplicity of use. However, other retaining channels are also possible, such as a loop through which the arms are threaded. Also, channels or loops may be formed on the inside surface for retaining a portion of the eyeglasses residing within the case.

Figs. 8-10 show another preferred embodiment of a case 30A in accordance with the present invention which is similar in construction to the case 30 described above. Like reference numerals are used to refer to components in the case 30A that are

similar, and preferably, identical in construction and operation to components included in the case 30A. Referring to Figs. 8-10, the case 30A includes all of the elements of the case 30, with the exception that the retaining means is a channel 24A. The channel 24A includes the sides 28 and an outwardly projecting center ridge 29 extending from adjacent the notch 18, toward the bottom 6, and between the sides 28 of the channel 24. The ridge 29, in combination with each of the sides 28 adjacent to its, defines grooves 31 which are a part of bottom surface 26A. The ridge 29 and sides 28 are suitably shaped to provide that, when eyeglasses are folded and inserted into the case 30A, the arms of the eyeglasses are received and retained within the grooves 31 to avoid side-to-side movement of the arms, and hence, movement of the folded frames in the case 30A.

The case 30A further includes opposing cut-outs 34A, 34B in the top edge 5. Each of the cut-outs 34A, 34B is a predetermined circumferential distance from the notch 18, such that they would be aligned with nose pads of eyeglasses whose frames have been folded toward each other for insertion into the case 30A. The size of the cut-outs 34A, 34B, and their positioning on the top edge 5, are suitably selected based on the typical size and positioning of nose pads on eyeglasses to improve the ease with which eyeglasses can be inserted into the case 30A. In use of the case 30A, a minimum of pressure needs to be applied to the corners 16 to open the mouth 12 to allow insertion of eyeglasses, because the portion of the eyeglasses including the nose pads, which is the portion of the eyeglasses to be inserted first into the case 30A, would pass with relative ease through the cut-outs 34A, 34B and then into the case 30A.

In a still another preferred embodiment, a case 40 in accordance with the present

invention may be shaped as an elongate sleeve, as shown in Figs. 11 and 12, to receive therein eyeglasses folding only at the temple hinges. Like reference numerals are used to refer to components in the case 40 that are similar, and preferably, identical in construction and operation to components included in the cases 1 and 30. As is well known, In the folded position, the arms of eyeglasses generally lay one over the other in opposite directions. When the eyeglasses are placed in the case 40, one of the arms 19 resides outside of case 40. The other arm 19 resides inside the case 40, and may be retained against the inside surface 11. The hinge 15 of the arm residing outside of the case rests within the notch 18.

It may be seen that, as the particular shape of several of the elements of the case of the invention can be particularly effective when formed to act with a particular style of eyeglasses, the invention therefore also relates to a case in combination with eyeglasses, in which the perimeter of the case, the notch, the rear face, and the retaining means, are all shaped to maximize the compactness, secure retaining ability, ease of open and closure, and ability to keep the lens free of contact with the surface of the case.

Although preferred embodiments of the present invention have been described and illustrated, it will be apparent to those skilled in the art that various modifications may be made without departing from the principles of the invention.